

Work Order ID 147654

Wednesday, June 08, 2016 2:49:58 PM

147654**U/R**

Page 1

Item ID: D412-711-101

Accept

N900040100

Setup Start

NS1Revision ID: URF 16-559

Stop

NS2

Item Name: Replacement Vertical Reference Window

Start Date: 6/2/2016 Start Qty: 3.00

3

Cust Item ID:

Required Date: 6/8/2016 Req'd Qty: 3.00

3

Customer:

Reference:

Approvals:

Process Plan: U

Date: _____

Tooling: _____

Date: _____

Run Start

NR1

QC: _____

Date: _____

SPC (Y/N): _____

Date: _____

Stop

NR2

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D412-711-101	B U/R <u>6/16/17</u>								
100	Document Control	0.00	DAS 27 9-89						
100									
DC	Memo	0.00							
Doc.Control -USB or Paperwork	Photocopy bluefiles and create labels for PPP D412-711-101 Change 002								
110	HAND FINISHING THERMOFORMING	0.00							DAS 07 9-89
110									
HandThermo	Memo	0.18							
Hand Finishing Thermoforming	Set up Machine as per folio FTA 077 and D711W program using mould DT9640								
120	HAND FINISHING THERMOFORMING	0.00							DAS 07 9-89
120									
HandThermo	Memo	0.19							
Hand Finishing Thermoforming	Cut Blanks to 37.5" by 43"								

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval		
Description Work Order Deviation				Disposition				Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY							
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐	Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐	Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐	OTHER : _____			

Work Order ID 147654***147654***

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Wednesday, June 08, 2016 2:49:58 PM

Item ID: D412-711-101 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: URF 16-559 Stop ***NS2***
Item Name: Replacement Vertical Reference Window
Start Date: 6/2/2016 Start Qty: 3.00 ***3*** Cust Item ID:
Required Date: 6/8/2016 Req'd Qty: 3.00 ***3*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130 *130* Thermoform Thermoforming Machine	THERMOFORMING MACHINE Memo Thermoform as per Dwg. D412-711-101 using DT 9640 and Folio FTA 077 Dwg. Rev. <u>B</u> Folio Rev. <u>C</u> Visually inspect for proper formation and clarity Visually and inspect/magic eye Verified by: <u>PL</u>	0.00 0.31				<u>3</u>			DAS 07 9-89
160 *160* HandThermo Hand Finishing Thermoforming	HAND FINISHING THERMOFORMING Memo 1) Trim off excess flange material 2) Buff out any light scratches or 3) Etch part number and batch number	0.00 0.59				<u>3</u>			DAS 07 9-89

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QS1042) Approval		
Description Work Order Deviation				Disposition				Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY							
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐				
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐				
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐				
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐				
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐				
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐				
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐				
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐				
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐				
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐				
Past Expiry Date ☐	Manufacturing Process ☐								
Misidentified ☐	Past Due ☐	OTHER :							

Work Order ID 147654***147654***

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Wednesday, June 08, 2016 2:49:58 PM

Item ID: D412-711-101

Accept

N900040100Setup Start ***NS1***

Revision ID: URF 16-559

Stop ***NS2***

Item Name: Replacement Vertical Reference Window

Start Date: 6/2/2016 Start Qty: 3.00

3

Cust Item ID:

Required Date: 6/8/2016 Req'd Qty: 3.00

3

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
170	QC2- Inspect parts off machine FAI/FAIB	0.00							DAS 07 9-89
170						3			
QC	Memo	0.00							
Quality Control	1) Visually inspect for clarity, and proper formation.								
180	QC5- Inspect part completeness to step on W/O ✓	0.00							
180									
QC	Memo	0.01							
Quality Control	1) Visually inspect for clarity, and proper formation.								
185	QC4- 100% Inspect kits for completeness	0.00							
185									
QC	Memo	0.01							
Quality Control									

3X DAS
27
9-89

AUG 09 2016

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date : _____	Step #: _____	QTY Effective : _____		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition		Completed By _____ Lead hand / Supervisor Approval Verification _____ QC / QA Coordinator Approval _____	
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
		OTHER : _____			

147654

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N900040100

Setup Start *NS1*

Stop *NS2*

Cust Item ID:

Start Date: 6/2/2016 **Start Qty:** 3.00 ***3***

Required Date: 6/8/2016 **Req'd Qty:** 3.00 ***3***

Customer:

Reference:

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

Run Start *NR1*

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop *NR2*

**Insp.
Stamp**

0.00

190

Packaging

Memo

0,00

Packaging

Location : FG099

200

QC21- Final Inspection - Work Order Release

0.00

200

QC

Memo

0.05

Quality Control

34

DAS

2

9-89

AUG 11 2016

RFH

16/08/10

dm 16/08/00

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval		
Description Work Order Deviation				Disposition					

Root Cause				FAULT CATEGORY			
Environment ☐	Design ☐	Doc/Data ☐	Equip/Tooling ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐
Handling/Pre ☐	Material ☐	Internal Transport ☐	Tribal Knowledge ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐
LOA ☐	Substation ☐	Past Expiry Date ☐	Misidentified ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐
				Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐
				Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐
				Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐
				Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐
				Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐
				Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐
				Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐
				OTHER : _____			

Picklist Print

Page 1

• Wednesday, June 08, 2016 2:49:57 PM

Work Order ID: 147654

147654

Parent Item: D412-711-101

D412-711-101

Parent Item Name: Replacement Vertical Reference Window

Start Date: 6/2/2016

Required Date: 6/8/2016

Start Qty: 3.00

Required Qty: 3.00

Comments: IPP Rev:A New Issue 06-02-01 JLM
Manufacture in-house 10/06/28 DL

IPP Rev. B.

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
---------------------------------	------------------------	---------------	-------------	---------------------	------------------	-----------------	--------------------	----------------	-------------	--------------	---------------	----------------	--------

MACRLICS.236

Purchased

No

sf

340.2500

64

DAS

07

9-89

MACRLICS 236

Plexiglass G 0.236"

16/07/08

Location

Loc Qty

Loc Code

therm

340.2500333

M132743

6.00003334

M134641 -

128

M134733

206.25

54.57344 sq ft
21.38 ft.

DQA: _____ Date: _____

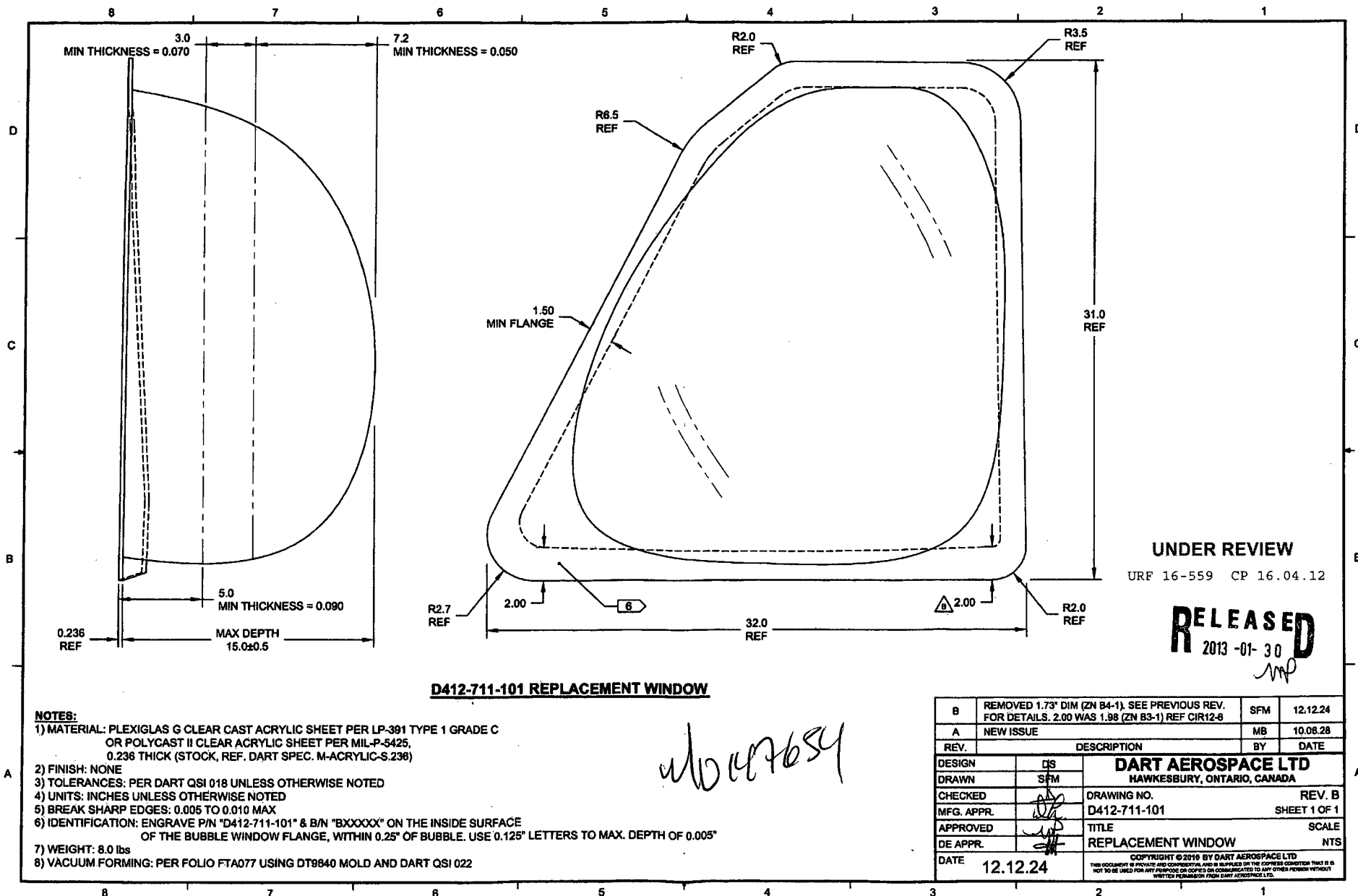


WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date : _____	Step #: _____	QTY Effective : _____		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition			
				Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER : _____					



DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date : _____	Step #: _____	QTY Effective : _____		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY			
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐	Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐	Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐
OTHER : _____					

Daryl Leger

From: Chris Provencal
Sent: Wednesday, April 20, 2016 1:06 PM
To: Daryl Leger
Subject: D412-711-101 deviation

From: David Shepherd
Sent: Thursday, April 14, 2016 4:31 PM
To: Chris Provencal <cprovencal@dartaero.com>; William Monterroza <wmonterroza@dartaero.com>
Cc: Patrick Smith <psmith@dartaero.com>
Subject: RE: Message from DART Aerospace Engineering Bizhub C454

Chris,

Thanks for completing the test. As discussed, my only request is that you add the minimum thicknesses listed below to the CIR and get Pat to re-sign. I am OK with you using the results of the test to approve deviations to windows that have just been manufactured so that we can make immediate deliveries to customers. Please try to have the updated TR and drawing to me sometime next week so that this doesn't fall through the cracks.

Regards,
David

From: Chris Provencal
Sent: April-14-16 2:10 PM
To: William Monterroza <wmonterroza@dartaero.com>; David Shepherd <dshepherd@dartaero.com>
Cc: Patrick Smith <psmith@dartaero.com>
Subject: RE: Message from DART Aerospace Engineering Bizhub C454

David,

Further, the min thickness on the tested part, D412-711-101 B144271 was:

0.052" @ 5" height on bottom face (dwg = 0.090")
0.076" @ 5" height on fwd face (dwg = 0.090")

0.046" @ 8" height on bottom face (dwg = 0.070")
0.065" @ 8" height on fwd face (dwg = 0.070")

0.043" @ on top/center (dwg = 0.050")

Chris

From: William Monterroza
Sent: Thursday, April 14, 2016 3:57 PM
To: Chris Provencal <cprovencal@dartaero.com>; David Shepherd <dshepherd@dartaero.com>
Cc: Patrick Smith <psmith@dartaero.com>
Subject: RE: Message from DART Aerospace Engineering Bizhub C454

Good work gentlemen. Thanks for the great effort.

As per David's comments earlier, once David reviews the data and the CIR, we can release the ones Daryl made out of the 0.233" material ahead of the documentation and reports. We will go ahead then and update the drawing to reflect the new minimum thickness as measured on the 0.177" window. What was that dimension by the way. It'd be interesting to know how thin that got with the 0.177" material.

Again, great work – thank you!

Thanks,
Will

Will Monterroza
X 250
M 1 613 677-9898
S dart-wmonterroza

From: Chris Provencal
Sent: Thursday, April 14, 2016 3:33 PM
To: David Shepherd <dshepherd@dartaero.com>
Cc: William Monterroza <wmonterroza@dartaero.com>; Patrick Smith <psmith@dartaero.com>
Subject: FW: Message from DART Aerospace Engineering Bizhub C454

David,

We successfully performed the test on the thin D412-711-101 window. The CIR is attached. I put the photos temporarily in:

\\DART-HBY-KAMAN\Engineer\Projects\1 Approved\711-b412-vertrefdoor\Working\TR-D412-711-1 Rev B photos

The loads are as follows:

Table 2 – Test Results for D412-711-101 Replacement Window

Direction	Limit/Ulimate	Req'd Load	Actual Load	Notes
Outboard	Limit	423 lb	437 lb	No permanent deformation.
Outboard	Ultimate	635 lb	656 lb	No failure.
Inboard	Limit	46 lb	65 lb	No permanent deformation.
Inboard	Ultimate	68 lb	84 lb	No failure.
Drag	Limit	484 lb	486 lb	No permanent deformation
Drag	Ultimate	725 lb	726 lb	No failure
Down	Limit	112 lb	124.5 lb	No permanent deformation
Down	Ultimate	168 lb	170.5 lb	No failure

For the limit tests, I chose a point on the window and we measured before/after measurements with a square and long ruler. There was no deflection.

The drag load was tricky. We kept the strap close to 7" above the base, which is the center of area according to AutoCAD. Pat used his foot to keep the strap from sliding up (ref photos). This would be conservative since the weight on the window is the applied load + some of the sandbag weight + some of the foot load. It took several tries to keep

strap at a good height and to keep the load above the test value for 15/3 seconds, with Steve working the come-a-long. We achieved the ultimate load for 3 seconds after several attempts (the one shown in the photo). I wanted another photo showing the load cell in the picture, after a lot more pumping to keep the load above the test value, it cracked. But ultimate was achieved.

Chris

DART AEROSPACE LTD	Work Order:	147654
Description: REPLACEMENT I/R WINDOW	Part Number:	0412-711-101
Inspection Dwg: 412-711-101 Rev: B		Page 1 of 1

INSPECTION SHEET

[illegible]

Measured by:	9-89	Checked by:	PD	QC Inspector:	
Date:	16/07/05	Date:	16/07/05	Date:	

Engineering Approval: (If necessary)		Date:	
--	--	--------------	--

Rev	Date	Change	Revised by	Approved
B	14.07.31	New Issue	KJ	

Work Order ID 147654

Wednesday, June 08, 2016 2:49:58 PM

147654**U/R**

Page 1

Item ID: D412-711-101

Accept

N900040100Setup Start ***NS1***Revision ID: URF 16-559Stop ***NS2***

Item Name: Replacement Vertical Reference Window

Start Date: 6/2/2016 Start Qty: 3.00

3

Cust Item ID:

Required Date: 6/8/2016 Req'd Qty: 3.00

3

Customer:

Reference:

Approvals:

Process Plan: U

Date: _____

Tooling: _____

Date: _____

Run Start ***NR1***

QC: _____

Date: _____

SPC (Y/N): _____

Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D412-711-101	B U/R <u>6/16/13</u>								
100	Document Control	0.00							
100									
DC	Memo	0.00							
Doc.Control -USB or Paperwork	Photocopy bluefiles and create labels for PPP D412-711-101 Change 002								
110	HAND FINISHING THERMOFORMING	0.00							
110									
HandThermo	Memo	0.18							
Hand Finishing Thermoforming	Set up Machine as per folio FTA 077 and D711W program using mould DT9640								
120	HAND FINISHING THERMOFORMING	0.00							
120									
HandThermo	Memo	0.19							
Hand Finishing Thermoforming	Cut Blanks to 37.5" by 43"								